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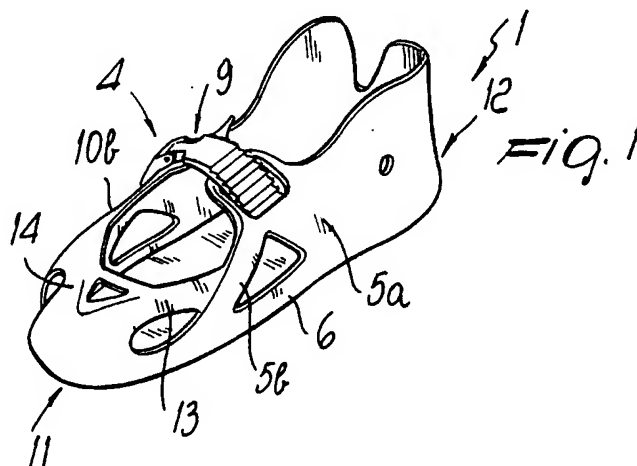
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I-20123 Milano (IT)(54) **Shell, in particular for sport shoes.**

(57) A shell, particularly for sports shoes such as ice skates or roller skates or trekking boots. The shell includes a single body that has a first flap (2) and a second flap (3), at least one of which is arranged transversely to the foot instep (4). A single fastening device (9) can be arranged between the first and

second flaps. The first and second flaps are connected along two directrices that are oblique with respect to the toe (11) and heel (12) regions. This configuration allows to reduce the number of shell closure levers, nonetheless ensuring optimum securing of the foot inside the shell.

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The present invention relates to a shell, particularly for sports shoes such as ice skates, roller skates, or trekking boots.

Conventional sports shoes, such as ice skates or roller skates, usually comprise a shell made of plastics, inside which an innerboot, made of soft material for the user's comfort, is to be internally associated.

An inconvenience of these conventional shoes is that the shell is open at the metatarsal region and at the foot instep region and therefore requires two or more fastening devices, constituted by levers, which allow to move the flaps of the shell closer to each other and then fasten them so as to secure the innerboot that can be positioned in the shell and consequently secure the foot that is accommodated in the innerboot.

Accordingly, the use of two or more levers causes an increase in the manufacturing costs of the shoe and increases the overall weight of the shoe. Furthermore the user has to perform several operations in order to fasten the shell or remove the foot from the innerboot.

US Patent 5,171,033 discloses an in-line skate having a shell in which multiple ventilation openings are formed. The edges of said openings are mutually connected by two levers which are arranged transversely to the foot instep regions.

European patent no. 0 551 704 discloses an in-line skate having a removable shoe in which, as a partial solution to the above mentioned drawbacks, the shell is substantially open at the foot instep and metatarsal regions and is provided, only at the toe region, with an element that partially and externally surrounds an innerboot along a direction that is oblique with respect to the longitudinal axis of the wheel supporting frame.

A cuff is articulated to said shell and has a single lever for fastening its flaps at the tibial region.

However, even this solution has drawbacks: the coupling between the innerboot and the shell is not optimum, because the considerable forces transmitted by the foot to the wheel supporting frame can lead to an unintentional disengagement of the innerboot with respect to the shell at the toe region, thus making sports practice dangerous.

Another known in-line skate has a shell formed by two parts: one part is associated with the wheel supporting frame and constitutes a supporting base for the sole and for part of the lateral regions of an innerboot, and the second part, constituted by a tongue, is pivoted transversely at the tip region of the first element, which affects the entire upper part of the foot and part of the tibia.

Said tongue interacts, in the tibial region, with an adapted lever that surrounds, to the rear, a cuff that is articulated to the first part approximately in

the malleolar region.

However, even this solution has drawbacks, because it requires the use of a retention element in the foot instep region; said element is constituted by a detachable fastening band constituted for example by material known by the trade-name "Velcro".

In any case, optimum securing of the innerboot is not achieved, and accordingly the transmission of forces from the foot to the wheels is not optimum. This is due, in particular, to the fact that the tongue, made of substantially rigid material, is in contact with the innerboot only in the foot instep region, where it is pressed by the fastening band, and that gaps form, however, between the innerboot and said tongue towards the toe region and therefore allow the innerboot to move with respect to the shell during skating: this relative motion produces ineffective transmission of forces, leading to difficulty in controlling the skate.

The aim of the present invention is therefore to solve the described technical problems, eliminating the drawbacks of the prior art, by providing a shell that allows optimum transmission of forces from the foot, with the optional interposition of a soft innerboot, to the shell itself, and has low manufacturing costs.

Within the scope of the above aim, an important object is to provide a shell in which the user needs to perform a single operating step to secure or release the foot.

Another important object is to provide a shell that has a modest weight with respect to the prior art.

Another object is to provide a shell that is reliable and safe in use, allows to transmit even the lateral thrusts of the foot in an optimum manner, and can be manufactured with conventional machines or equipment.

This aim, these objects, and others which will become apparent hereinafter are achieved by a shell, in particular for sports shoes such as ice skates or roller skates or trekking boots, characterized in that it comprises a single body having a first flap and a second flap, at least one of said flaps being arranged transversely to the foot instep, a single fastening device being arrangeable between said flaps, either one of said first and second flaps being connected along two directrices that are oblique with respect to the toe and heel regions.

Advantageously, the shell has fit adapting means in the toe region.

Further characteristics and advantages of the invention will become apparent from the detailed description of two preferred but not exclusive embodiments, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a lateral perspective view of the shell;
figure 2 is a side elevated view of the shell;
figures 3 and 4 are top views of the shell with
the individual fastening device in the maximum
and minimum fastening conditions;
figure 5 is a view, similar to figure 1, of the fit
adapting means;
figure 6 is a detail view of the means according
to figure 5.

With reference to the above figures, the reference numeral 1 generally designates a shell that is usable in particular for sports shoes such as for example ice skates or roller skates or trekking boots.

Said shell 1, which is preferably made of plastics, comprises a single body that has a first tab or flap 2 and a second tab or flap 3. At least one of said tabs or flaps is arranged transversely to the foot instep region 4.

In the particular embodiment, the first flap 2 protrudes towards the second flap 3.

Advantageously, the first flap 2 is substantially triangular, with first sides 5a and 5b that are connected to an edge 6 that laterally surrounds the region 7 where the sole of the foot rests; said sides are mutually connected at a vertex 8 that faces towards the second flap 3.

A single fastening device 9, such as for example a lever that allows to move said first and second flaps mutually closer, is interposed between said vertex 8 and the facing second flap 3.

The second flap 3 is also substantially triangular, with second sides 10a and 10b that are connected to the lower edge 6 and with a vertex that is directed away from the region 7 where the sole of the foot rests.

Both the first flap and the second flap are thus connected to a vertex along two directrices that are oblique with respect to the toe region 11 and the heel region 12, so as to allow to surround the foot inside the shell in an optimum manner and at the same time allow optimum transmission of forces imparted by the foot along the first and second sides at the single fastening device 9, which thus performs its functions in an optimum manner.

Advantageously, there is also a means for further securing the innerboot in the toe region 11; said means comprises a third flap 13 and a fourth flap 14 that extend from the toe region 11 and connect to one of the first and second sides and particularly to the first side 5b and to the second side 10b.

Connection to said first and second sides can be detachable: in this manner, as shown in figures 5 and 6, the third and fourth flaps have loose ends at which a temporary engagement means 15, such as for example T-shaped studs, is associated. Said engagement means can be positioned at com-

plementarily shaped coupling means 16 constituted by slots formed on said first and second sides.

A fit adaptation means is thus obtained, as the region of the tip of the shell that comprises the third and fourth flaps 13, 14 can slide, during fastening, with respect to the remaining part of the shell. One thus obtains better adaptation to the anatomical shape of the innerboot and, accordingly, better locking of said innerboot inside the shell.

The use of the invention is therefore as follows: once the fastening device 9 has been opened and once an adapted soft innerboot has been placed inside the shell 1, the foot accommodated in the innerboot can be fastened in an optimum manner simply by activating the fastening device 9.

In this manner, the first, second, third, and fourth flaps surround the foot in an optimum manner, whereas the shape of the first and second sides allows to achieve optimum securing of the foot, transferring the fastening force applied at the fastening device 9 to the toe and heel regions along directrices that are constituted by the first, second, third, and fourth flaps.

The optional presence of the temporary engagement means and of the complementarily shaped coupling means allows automatic adaptation of the fit according to the anatomical shape of the user's foot.

It is thus evident that the invention has achieved the intended aim and objects, a shell having been obtained that allows to transmit, in an optimum manner, the forces applied by the foot to the wheels and requires the use of a single securing element to perform optimum securing of the foot to the shell, allowing to contain manufacturing costs, to perform a single maneuver to secure or release the foot, and to contain the overall weight of the shoe.

At least one quarter 17 that surrounds the lower part of the leg can also be associated with the shell.

The shell according to the invention is of course susceptible of numerous modifications and variations, all of which are within the scope of the same inventive concept.

The materials and the dimensions that constitute the individual components of the shell may of course also be the most pertinent according to the specific requirements.

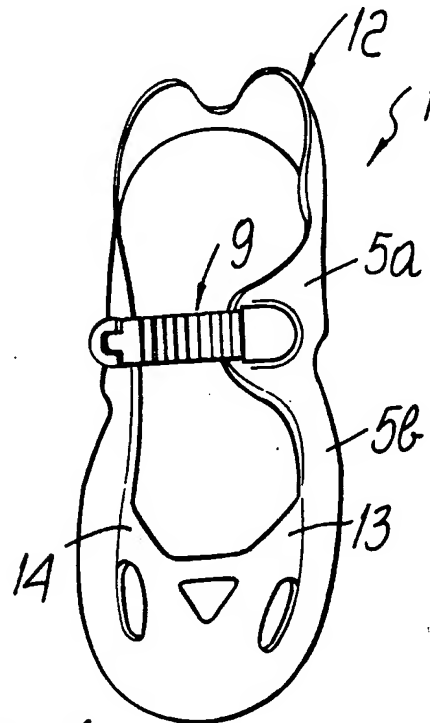
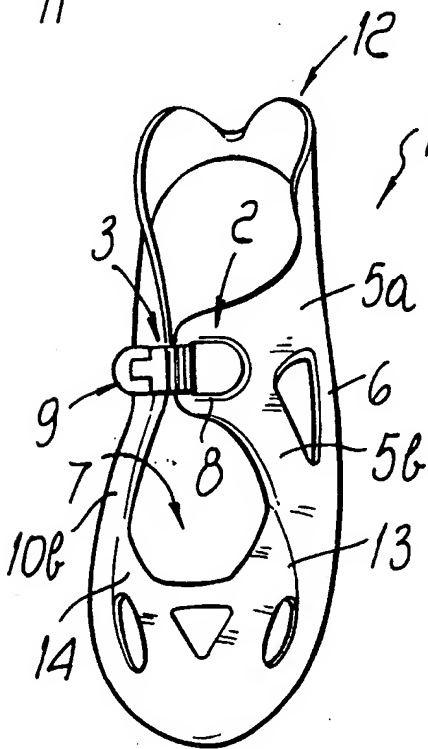
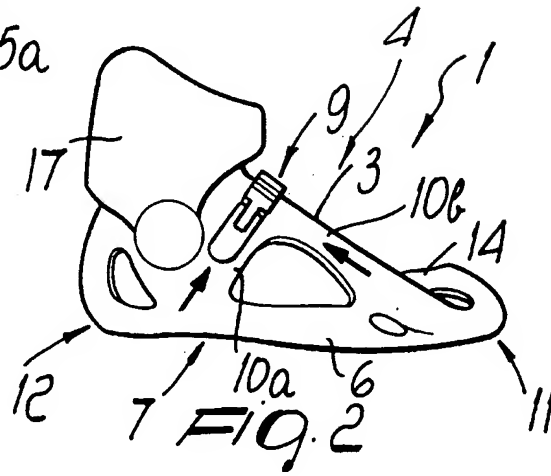
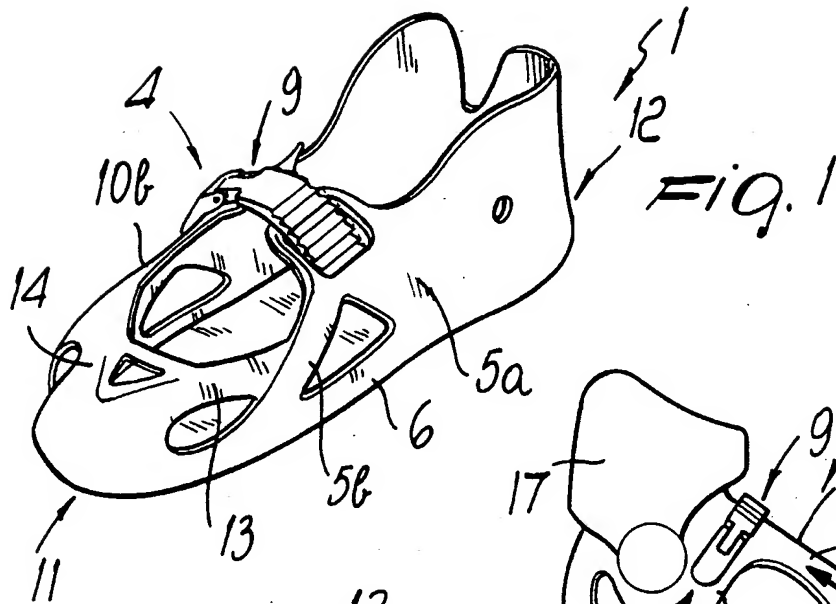
Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. Shell, in particular for sports shoes such as ice skates or roller skates or trekking boots, characterized in that it comprises a single body having a first flap (2) and a second flap (3), at least one of said flaps being arranged transversely to the foot instep (4), a single fastening device (9) being arrangeable between said flaps, either one of said first and second flaps being connected along two directrices that are oblique with respect to the toe and heel regions. 5
2. Shell according to claim 1, characterized in that said first flap (2) protrudes towards said second flap (3) that is arranged transversely to the foot instep region (4). 10
3. Shell according to claim 2, characterized in that said first flap (2) has a substantially triangular shape and comprises first sides (5a,5b) that are connected to an edge (6) that surrounds laterally the region (7) where the sole of the foot rests and are mutually connected at a vertex (8) that is directed towards said second flap (3). 15 20 25
4. Shell according to claim 3, characterized in that said single fastening device (9), such as a lever that allows said first and second flaps to move mutually closer, is interposed between said vertex (8) and said facing second flap (3). 30
5. Shell according to claim 4, characterized in that said second flap (3) has a substantially triangular shape and comprises second sides (10a,10b) which are connected to said lower edge and the vertex (8) of which is directed away from said region (7) where the sole of the foot rests. 35 40
6. Shell according to claim 5, characterized in that said first and second sides (5a,5b,10a,10b) of said first and second flaps (2,3) are connected to a vertex along two directrices that are oblique with respect to the toe (11) and heel (12) regions. 45
7. Shell according to one or more of the preceding claims, characterized in that it has a third flap (13) and fourth flap (14) that extend from said toe region (11) and connect to at least one of said adjacent first and second sides. 50 55
8. Shell according to one or more of the preceding claims, characterized in that it is provided with means (15) for adapting the fit in the toe

region.

9. Shell according to claim 8, characterized in that the connection between said third and fourth flaps (13,14) and said first and second sides (5a,5b,10a,10b) is detachable, said fit adapting means being constituted by a temporary engagement means, such as T-shaped studs (15), which are provided at the free ends of said third and fourth flaps (13,14), said temporary engagement means being arrangeable at complementarily shaped coupling means which are constituted by slots (16) formed on at least one of said first and second sides (5a,5b,10a,10b).



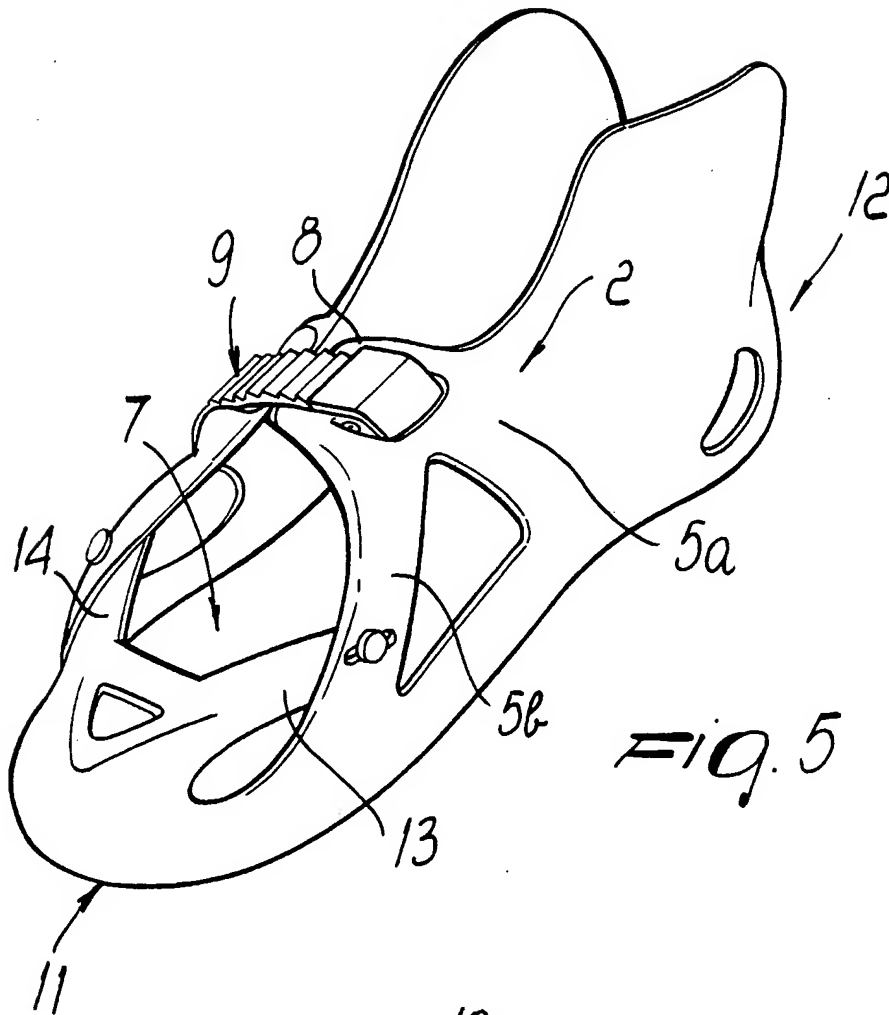


Fig. 5

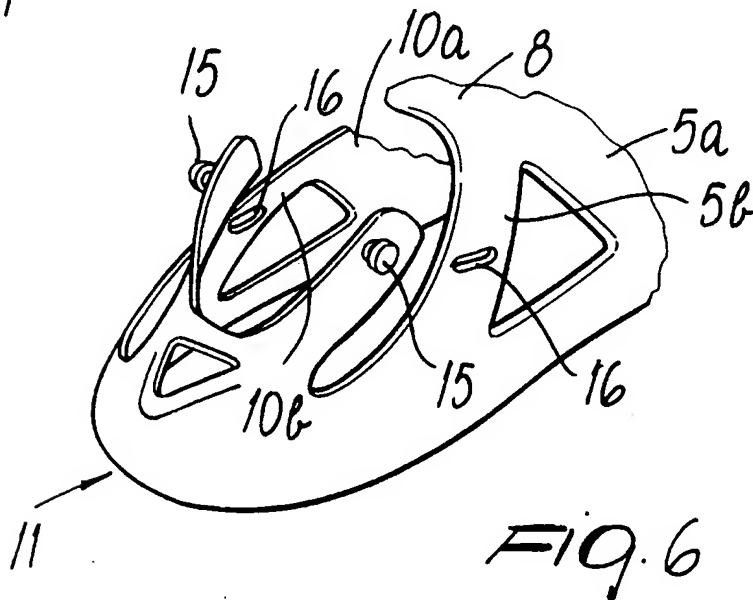


Fig. 6



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EUROPEAN SEARCH REPORT

Application Number
EP 95 10 6236

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	FR-A-2 691 885 (GELIN) * figures * ---	1-3	A43B5/16 A43B23/04 A43B5/00
X	DE-U-91 00 746 (SALOMON S.A.) * page 4, line 16 - line 21; figure * ---	1	
A	WO-A-81 01359 (SPRENG) * page 5, last paragraph; figures 1,3 * ---	1	
D,A	US-A-5 171 033 (OLSON BRENNAN J ET AL) 15 December 1992 ---		
D,A	EP-A-0 551 704 (ROLLERBLADE INC) 21 July 1993 -----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			A43B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 7 August 1995	Examiner Scholvinck, T
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- A : member of the same patent family, corresponding document	

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